

1 WHAT IS CLAIMED IS:

- 2
- 3 1. An integrated process for lowering the pour point of Fischer-Tropsch
4 derived wax which comprises:
- 5
- 6 (a) collecting separately from a Fischer-Tropsch unit a
7 Fischer-Tropsch wax and a Fischer-Tropsch condensate;
- 8
- 9 (b) pyrolyzing the Fischer-Tropsch wax in a thermal cracking zone
10 under thermal cracking conditions pre-selected to achieve a
11 cracking conversion of the paraffins molecules present in the
12 Fischer-Tropsch wax of at least 10 percent;
- 13
- 14 (c) recovering from the thermal cracking zone a low pour point
15 Fischer-Tropsch derived wax and a Fischer-Tropsch derived
16 overhead product; and
- 17
- 18 (d) mixing at least a portion of the Fischer-Tropsch derived
19 overhead product recovered in step (c) and at least a portion of
20 the Fischer-Tropsch condensate collected in step (a) with at
21 least a portion of the low pour point Fischer-Tropsch derived
22 wax in the proper proportion to produce a Fischer-Tropsch
23 derived waxy product having a pour point equal to or below
24 about 40 degrees C.
- 25
- 26 2. The process of claim 1 wherein the thermal cracking conditions in the
27 thermal cracking zone are pre-selected to achieve a cracking
28 conversion of at least 20 percent.
- 29
- 30 3. The process of claim 2 wherein the thermal cracking conditions in the
31 thermal cracking zone are pre-selected to achieve a cracking
32 conversion of at least 30 percent.

- 1 4. The process of claim 3 wherein the thermal cracking conditions in the
2 thermal cracking zone are pre-selected to achieve a cracking
3 conversion of at least 50 percent.
4
- 5 5. The process of claim 1 wherein the Fischer-Tropsch derived waxy
6 product of step (d) has a pour point below about 20 degrees C.
7
- 8 6. The process of claim 1 wherein the Fischer-Tropsch derived overhead
9 product of step (c) is further separated prior to step (d) into a C₅ plus
10 hydrocarbon product and a C₄ minus hydrocarbon product and the
11 C₅ plus hydrocarbon product is mixed with the Fischer-Tropsch
12 condensate and the low pour point Fischer-Tropsch derived wax in
13 step (d) to produce the Fischer-Tropsch derived waxy product.
14
- 15 7. The process of claim 6 wherein the C₄ minus hydrocarbon product is
16 recycled to the Fischer-Tropsch unit.
17
- 18 8. The process of claim 6 wherein methane is separately recovered from
19 the C₄ minus hydrocarbon product prior to the C₄ minus hydrocarbon
20 product being recycled to the Fischer-Tropsch unit and the methane is
21 recycled to a reformer for conversion into syngas for use as feed to the
22 Fischer-Tropsch unit.
23
- 24 9. The process of claim 1 further including the step of blending with the
25 Fischer-Tropsch waxy product a petroleum derived crude.
26
- 27 10. The process of claim 1 wherein the Fischer-Tropsch derived waxy
28 product also has a reduced viscosity as compared to the
29 Fischer-Tropsch wax.

- 1 11. A process for lowering the pour point of Fischer-Tropsch derived wax
2 which comprises:
3
- 4 (a) collecting separately from a Fischer-Tropsch unit a
5 Fischer-Tropsch wax and a Fischer-Tropsch condensate;
6
 - 7 (b) pyrolyzing the Fischer-Tropsch wax in a thermal cracking zone
8 under thermal cracking conditions pre-selected to achieve a
9 cracking conversion of the paraffins molecules present in the
10 Fischer-Tropsch wax of at least 10 percent;
11
 - 12 (c) recovering from the thermal cracking zone a thermally cracked
13 Fischer-Tropsch derived wax intermediate having a lower pour
14 point than the Fischer-Tropsch wax; and
15
 - 16 (d) mixing at least a portion of the Fischer-Tropsch condensate
17 collected in step (a) with at least a portion of the thermally
18 cracked Fischer-Tropsch derived wax intermediate in the proper
19 proportion to produce a Fischer-Tropsch derived waxy product
20 having a pour point equal to or below about 40 degrees C.
21
- 22 12. The process of claim 11 wherein the thermal cracking conditions in the
23 thermal cracking zone are pre-selected to achieve a cracking
24 conversion of at least 20 percent.
25
- 26 13. The process of claim 12 wherein the thermal cracking conditions in the
27 thermal cracking zone are pre-selected to achieve a cracking
28 conversion of at least 30 percent.
29
- 30 14. The process of claim 13 wherein the thermal cracking conditions in the
31 thermal cracking zone are pre-selected to achieve a cracking
32 conversion of at least 50 percent.

- 1 15. The process of claim 11 wherein the thermally cracked
2 Fischer-Tropsch derived wax intermediate has a pour point of less than
3 about 45 degrees C.
4
- 5 16. The process of claim 11 wherein the Fischer-Tropsch derived waxy
6 product of step (d) has a pour point below about 20 degrees C.
7
- 8 17. The process of claim 11 further including the step of blending with the
9 Fischer-Tropsch waxy product a petroleum derived crude.
10
- 11 18. The process of claim 11 wherein the Fischer-Tropsch derived waxy
12 product also has a reduced viscosity as compared to the
13 Fischer-Tropsch wax.